

REMARKS

This is intended as a full and complete response to the Office Action dated August 30, 2005, having a shortened statutory period for response set to expire on November 30, 2005. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1, 5, 7-10, 16, 17, 21-26, 28, 29, 31-33, 35-38, 41-43 remain pending in the application after entry of this response. Claims 2, 11-15, 34, and 40 have been cancelled without prejudice. Claims 1, 5, 16, 24-26, 29, 31, 35, and 41 have been amended and new claim 43 has been added. No new matter has been added by the amendments or new claims. Reconsideration of the rejected claims is requested for reasons presented below.

The specification is objected to for failing to provide proper antecedent basis for the phrase "solid state device." Claim 1 has been amended to overcome the objection. Withdrawal of the objection is respectfully requested.

Claim 29 is objected to because of informalities. Claim 29 has been amended to overcome the objection. Withdrawal of the objection is respectfully requested.

Claims 1 and 35-38 stand rejected under 35 USC § 103(a) as being unpatentable over *Bodine* (US 2,948,059) in view of *Flanders et al.* (US 6,009,948). Claim 1 has been amended to incorporate claim 2 and claims 35-38 depend from claim 1. Withdrawal of the rejection is respectfully requested.

Claims 2, 5, 7, 11, 13, 14, 24, 25 and 31 stand rejected under 35 USC § 103(a) as being unpatentable over *Bodine* in view of *Flanders et al* as applied to claim 1 above, and further In view of *Juvan* (US 5,037,524). Claims 2 (incorporated into claim 1), 11, 13, and 14 have been canceled. Applicant respectfully traverses the rejection. There is no motivation to combine *Bodine* and *Flanders*. *Bodine* teaches a sonic system for unscrewing threaded pipe joints. *Flanders* teaches a system for freeing a stuck object (i.e. a drill pipe) in a wellbore. *Flanders* teaches using its system to free the entire string of drill pipe whereas *Bodine* is just targeting the coupling between the free and stuck portions of the drillstring. These devices may be related to a conventional process for remedying a stuck drill pipe. Step one would be to activate a jar (which is akin to the

Flanders system) to attempt to free the entire string and, if step one fails, then step two would be to lower a string shot (akin to *Bodine's* system) so that the free portion may be separated from the stuck portion. Thus, the systems may be used in combination rather than modifying one system with the other.

Further, *Juvan* is not analogous art. *Juvan* teaches an apparatus for treating waste water to remove contaminants. This is hardly the same field as drill string recovery. Further, *Juvan's* device does not seem to be reasonably pertinent. *Juvan's* device basically imparts an intense amount of energy, via high-intensity light coupled with a shock wave, into a volume of liquid to break chemical bonds. While freeing a stuck drill pipe calls for an impact or shock wave, it is desirable not to damage or destroy the pipe. *Juvan* teaches that its firing chamber must be designed for static pressures of 50-100 ksi (and dynamic pressures up to 500 ksi). (*Juvan*, col. 7, lines 29-31.) Drill pipe however, is usually designed for internal pressures of about 10 ksi with heavier grades able to sustain up to about 30 ksi (Lyons et al., Standard Handbook of Petroleum and Natural Gas Engineering 4-180—4-182 (2d ed. 2005).) Thus, using *Juvan's* device on drill pipe would substantially damage or destroy the pipe. Further, *Bodine* teaches away from a combination with *Juvan* by criticizing conventional string shots for damaging couplings (col. 2, lines 27-33) and touting an advantage that using its system results in better control so that the coupling is not damaged (col. 1, lines 46-49). Therefore, combination of the references is improper. Withdrawal of the rejection is respectfully requested.

Specifically regarding claim 24, none of *Bodine*, *Flanders*, and *Juvan* teaches, suggests, or discloses either using the sonic wave generator while reciprocating the tubular member as recited in claim 24. The Examiner cites col. 10, lines 28-35 of *Bodine* for teaching reciprocating the tubular member:

Vertical reciprocation of the lower end of shaft 101 then effects an oscillatory displacement of the liquid between the opposed ends of the two shafts 101 and 135 so that an oscillatory body of liquid is forced radially outward towards the surrounding casing coupling and then inward in turn, so as to alternately develop expansive and then contractive stress on the casing and coupling sleeve.

Shaft 101 is a member of sonic wave generating device 100 not casing 88 (col. 6, lines 48-55; col. 7, lines 33-37). Further, neither *Flanders* nor *Juvan* discloses this act. Therefore, claim 24 is patentable over *Bodine*, *Flanders*, and *Juvan*.

Specifically regarding claim 25 and 31, none of *Bodine*, *Flanders*, and *Juvan* teaches, suggests, or discloses either using the sonic wave generator while substantially reciprocating the back-off tool as recited in claims 25 and 31. *Bodine* discloses reciprocating the shaft of the back-off tool, however, it is vibratory reciprocation caused by the tool itself which is not substantial movement (col. 7, lines 17-19). Further, neither *Flanders* nor *Juvan* discloses this act. Therefore, claims 25 and 31 are patentable over *Bodine*, *Flanders*, and *Juvan*.

Claims 8-10, 16, 17, 21 and 42 stand rejected under 35 USC § 103(a) as being unpatentable over *Bodine* in view of *Flanders* and *Juvan* as applied to claims 1 and 5 above, and further in view of *Zunkel* (US 6,012,521). Applicant respectfully traverses the rejection. There is no motivation to combine *Zunkel* with *Bodine*, *Flanders*, and *Juvan*. *Zunkel* discloses a pressure wave generator for generating pulses in the borehole and the surrounding formation, not in a drill string (FIG. 1; col. 10, lines 43-63; col. 11, lines 43-54). *Zunkel* teaches using the pressure wave generator after the bore hole has been drilled and the casing set. Therefore, combination of the references is improper. Withdrawal of the rejection is respectfully requested.

Claims 15, 22, 23, 26, 28, 29, 32-34 and 41 stand rejected under 35 USC § 103(a) as being unpatentable over *Bodine* in view of *Flanders* and *Juvan* and/or *Zunkel* as applied to claims 11 and 16 above, and further in view of *Kinley* (US 2,305,2661). Claims 15 and 34 have been canceled. Applicant respectfully traverses the rejection. There is no motivation to combine *Zunkel* with *Bodine*, *Flanders*, and *Juvan*. *Bodine* teaches that its system creates a dynamic looseness condition due to different resonant frequencies of the coupling sleeve and the casing. The differing resonant frequencies results in an out of phase response for which he terms the dynamic looseness condition. *Bodine* touts that the dynamic looseness condition is so effective, that, it alone may be sufficient to free a frozen/corroded coupling even without the presence of un-screwing torque (col. 9, lines 5-19). From this teaching, it is reasonable to infer that the presence of the dynamic looseness condition along with un-screwing torque will be

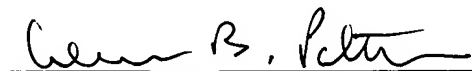
adequate to loosen the coupling. Thus, according to *Bodine's* teaching, adding the step of setting a neutral weight position would be redundant. Further, *Kinley* teaches the use of a string shot. As discussed above, *Bodine* teaches away from using a string shot because of the damage it will cause the coupling. Therefore, combination of the references is improper. Withdrawal of the rejection is respectfully requested.

Specifically regarding claims 5, 35, and 43, none of *Bodine*, *Flanders*, *Juvan*, *Zunkel*, and *Kinley* teaches, suggests, or discloses either an amplitude-variable controller or the act of using an amplitude-variable sonic wave generator as a back-off tool. *Bodine* discloses only frequency control of its system (col. 9, lines 38-74). *Flanders* discloses only frequency control of its system (col. 3, lines 16-31). *Juvan* doesn't provide any detail on control of its system. *Zunkel* discloses pressure waves of equal amplitude being generated (col. 2, lines 28-35). *Kinley* discloses a string shot which is not variable by either amplitude or frequency. Therefore, claims 5, 35, and 43, and their dependents, are patentable over *Bodine*, *Flanders*, *Juvan*, *Zunkel*, and *Kinley*.

Claim 40 stands rejected under 35 USC § 103(a) as being unpatentable over *Bodine*. Claim 40 has been canceled. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed. Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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